CLAIMS

1. A method of refining a ferroalloy, including the step of blowing molecular oxygen or a gas mixture including molecular oxygen into a melt of the ferroalloy, wherein a metallurgically acceptable particulate material is introduced from above into the melt, the particulate material being carried into the melt in a first supersonic gas jet which travels to the melt shrouded by a second gas jet, and the second gas jet is a supersonic gas jet.

2. A method according to claim 1, wherein the metallurgically acceptable particulate material is selected from metals that are to be included in the refined alloy, alloys of said metals, and oxides of said metals, and mixtures thereof.

3. A method according to claim 1 or claim 2, wherein the ferroalloy contains at least 30% by weight of iron.

4. A method according to any one of the preceding claims, wherein the ferroalloy is ferrochrome and the metallurgically acceptable particulate material comprises an oxide of chromium.

5. A method according to claim 4, wherein the oxide of chromium is chromite.

6. A method according to any one of the preceding claims, wherein the metallurgically acceptable particulate material comprises ferrochrome.

7. A method according to any one of claims 1 to 3, wherein the ferroalloy is a stainless steel and the metallurgically acceptable particulate material is an oxide of chromium.

8. A method according to claim 1 or claim 2, wherein the ferroalloy is ferromanganese and the metallurgically acceptable particulate material is an oxide of manganese.

9. A method according to any one of the preceding claims, in which the metallurgically acceptable particulate material is introduced into the melt in fine particulate form.

10. A method according to claim 9, wherein the mean particle of the metallurgically acceptable particulate material is 1 mm or less.

11. A method according to any one of the preceding claims, wherein the gas that forms the first gas jet is an oxidising gas, a non-oxidising gas, or a mixture of an oxidising gas and a non-oxidising gas.

12. A method according to claim 11, wherein the oxidising gas is oxygen.

13. A method according to claim 11 or claim 12, wherein the non-oxidising gas is one or both of argon and steam.

14. A method according to any one of the preceding claims, wherein the second gas jet is formed of burning gases.

15. A method according to any one of the preceding claims, in which the first gas jet is ejected from a first Laval nozzle at a velocity in the range of Mach 1.5 to Mach 4 and the second gas jet is ejected from a second Laval nozzle at a velocity also in the range of Mach 1.5 to Mach 4.

16. A method according to claim 15, wherein the first and second Laval nozzles form part of a metallurgical lance comprising an axial first gas passage terminating at

its outlet and in the first Laval nozzle, a shrouding gas passage about the main gas passage terminating at its outlet end in the second Laval nozzle, and a particulate material transport passage having an axial outlet which communicates with the first Laval nozzle.

17. A method according to claim 16, wherein the said axial outlet terminates in the divergent part of the first Laval nozzle.

18. A method according to claim 16 or claim 17, wherein the shrouding gas passage comprises a combustion chamber.

19. A method according to any one of the preceding claims, wherein the metallurgically acceptable particulate material is introduced into the melt continuously during a first part of a refining operation.

20. A method according to claim 19, in which the first gas jet comprises oxygen and introduction of the first gas jet into the melt continues after introduction of the metallurgically acceptable particulate material into the melt has ceased.

21. A method according to claim 20, in which introduction of the first gas jet into the melt ceases before the end of the refining operation.